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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/317,056	05/24/1999	YASUTAKA NAKASHIBA	NEYM16.133	8595

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EXAMINER

AGGARWAL, YOGESH K

ART UNIT	PAPER NUMBER
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2622

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/317,056	NAKASHIBA, YASUTAKA	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,6,9,10 and 13-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,9,10 and 13-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 5, 6, 9, 10 and 13-22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 9, 10, 13, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens (US Patent # 4,974,043) in view of (Applicant's admitted prior art).

[Claim 1]

Stevens discloses a method for driving a solid-state image pickup device (figure 1) which stores, in a plurality of photo-electric conversion units (16), signal charges corresponding to an incident light during a prescribed time period (col. 2 line 64-col. 3 line 3, col. 4 lines 40-46, figures 1 and 4), each of said photo-electric conversion units (16) being provided with an overflow drain structure (20) excludes surplus charges from said photo-electric conversion units by an electric potential barrier (col. 3 lines 6-9), said electric potential barrier being maintained at a first level between said OFD structure and said photo-electric conversion units during said prescribed time period (e.g. potential 24P shown in figure 4 formed under the shutter gate 24 during an integration period during which light charges are stored in photo-detectors 16, col. 3 lines 9-13), reads out said signal charges by grouping said photo-electric conversion units into a prescribed

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number of regions (figure 1 shows a group of photodetectors 16 reading out charges), and outputs image signal from all of the photo-electric conversion units by repeating the read-out procedures, said read-out procedures being carried out during a time period other than said prescribed time period (figure 5 shows a reset time period {which is different from the integration period in figure 4} and charges are readout from the photo-detectors 16 across the area under the shutter gate 24 into the drain 20, col. 4 lines 62-65), said read-out procedures comprising the steps of

raising up said electric potential barrier to a higher level than the first level after cutting off incident light (potential 24P is raised during a reset period as shown in figure 5 as compared to the integration period in figure 4, col. 4 lines 54-68, It is noted that during reset period there is effectively no incident light falling on the pixels due to the electronic shuttering action);

starting reading out said signal charges (col. 5 lines 1-23);

Stevens does not disclose cutting off said incident light by a cut off means such as a mechanical shutter, however, AAPA discloses the use of a mechanical shutter to cut off incident light before reading out the signal charges (page 3, lines 13-16) for the very well known and established reason of eliminating the continual build up of excess charge by the photo-electric conversion units. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have used Applicants admitted use of a mechanical shutter in Steven's invention in order to eliminate the continual build up of excess charge by the photo-electric conversion units.

In regards to claim 2 Examiner notes on that how much of an overflow barrier OFB potential barrier difference to secure is nothing more than a design matter that can suitably be

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determined by one skilled in the art according to the properties, etc. of the solid-stage pickup element that is used. Official Notice is taken. As such, it is only a matter of design choice to increase the potential barrier difference by a voltage greater than 0.4 V according to the properties, etc. of the solid-stage pickup element that is used.

In regards to claim 9 see examiners notes on the rejection of claim 1. Stevens discloses a horizontal overflow drain (col. 3 lines 13-17).

In regards to claim 10 see examiners notes on the rejection of claims 2 and 9.

In regards to claim 13 Stevens discloses said signal charges are read out from said photo-electric conversion units through signal read-out portions (e.g., col. 5 lines 1-5) and the electric potential of said electric potential barrier during the read-out step is deeper than an electric potential which is applied in signal read-out portion during the times except said read-out step (potential 24P is raised during a reset period as shown in figure 5 as compared to the integration period in figure 4).

In regards to claim 14 see examiners notes on the rejection of claims 2 and 13.

In regards to claim 17 see examiners notes on the rejection of claim 13.

In regards to claim 18 see examiners notes on the rejection of claims 2 and 17.

In regards to claims 19-22 see Examiner's notes on the rejections above.

4. Claims 5, 6, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 4,974,043 to Stevens), (Applicant's admitted prior art) and in further view of (USPN 5,903,021 to Lee et al).

In regards to claim 5 see examiners notes on the rejection of claims 1 and 9. Note that Stevens does not teach to have a vertical OFD. Applicant's admitted prior art does teach to have

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a vertical OFD, however there is no explicit motivation in applicant's admitted prior art to use applicant's admitted vertical OFD in Steven's invention. Lee et al, herein Lee, teaches that either a lateral or vertical OFD can be used where in using a vertical overflow drain uses less photodetector area and thus increases the fill factor (column 6, lines 40-56 Lee). Therefore it would have been obvious to one of ordinary skill in the art to have used a vertical OFD in Steven's invention instead of a lateral OFD in order to increase the fill factor.

In regards to claim 6 see examiners notes on the rejection of claims 2 and 5.

In regards to claim 15 see examiners notes on the rejection of claim 13.

In regards to claim 16 see examiners notes on the rejection of claims 2 and 15.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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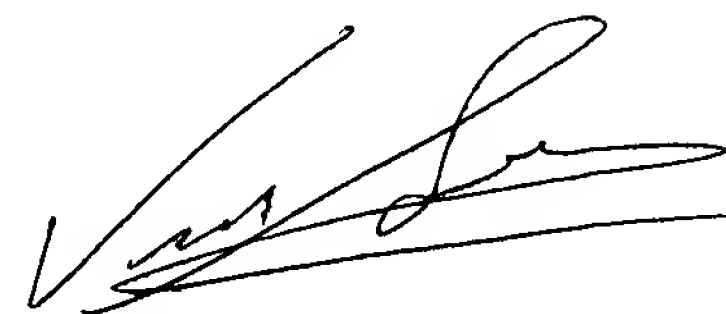
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360.

The examiner can normally be reached on M-F 9:00AM-5:30PM.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571)-272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YKA
August 14, 2006



VIVEK SRIVASTAVA
PRIMARY EXAMINER